AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A field ~~emission-type~~ emission electron source ~~including~~ comprising an insulative substrate and an electron source element formed on the side of one surface of said insulative substrate, said electron source element ~~having~~ comprising:

a lower electrode;

a surface electrode; and

a strong-field drift layer including polycrystalline silicon and disposed between said lower electrode and said surface electrode, said strong-field drift layer allowing electrons to pass therethrough according to an electric field generated when a certain voltage is applied to said lower and surface electrodes in such a manner that said surface electrode has a higher potential than that of said lower electrode, said field ~~emission-type~~ emission electron source comprising:

a buffer layer provided between said strong-field drift layer and said lower electrode [[layer]], said buffer layer having an electrical resistance greater than that of said polycrystalline silicon, and said buffer layer being composed of a film which is uniformly formed over the whole area on the side of said surface of said insulative substrate.

2. (Currently Amended) The field ~~emission-type~~ emission electron source according to claim 1, wherein said buffer layer includes an amorphous layer.

3. (Currently Amended) The field ~~emission-type~~ emission electron source according to claim 1, in which a plural number of said electron source elements are formed on the side of said surface of said insulative substrate, wherein

said insulative substrate includes a glass substrate allowing infrared rays to transmit therethrough, and

said buffer layer includes a portion of a film which is made of a material capable of absorbing infrared rays and formed to cover the whole area on the side of said surface of said insulative substrate before the formation of said strong-field drift layer.

4. (Currently Amended) The field ~~emission-type~~ emission electron source according to claim 3, wherein said amorphous layer includes an amorphous silicon layer.

5. (Currently Amended) The field ~~emission-type~~ emission electron source according to claim 3, wherein said strong-field drift layer includes anodized porous polycrystalline silicon.

6. (Currently Amended) The field ~~emission-type~~ emission electron source according to claim 5, wherein said strong-field drift layer includes a plurality of columnar semiconductor crystals each formed along the thickness direction of said lower electrode, and a number of nanometer-order semiconductor nanocrystals residing between said semiconductor crystals, each of said semiconductor nanocrystals having a surface formed with an insulating film which has a thickness less than the grain size of said semiconductor nanocrystal.

7. (Currently Amended) A method of producing the field ~~emission-type~~ emission electron source ~~according to~~ of claim 1, comprising:

forming the lower electrode on the side of said surface of said insulative substrate, and then forming the buffer layer on said lower electrode before forming the strong-field drift layer.

8. (Currently Amended) A method of producing the field ~~emission-type~~ emission electron source ~~according to~~ of claim 6, comprising:

~~a lower-electrode forming step of~~ forming the lower electrode on the side of said surface of said insulative substrate;

~~a first film-forming step of~~ forming the buffer layer on the side of said surface of said insulative substrate after said lower-electrode forming step;

~~a second film-forming step of~~ forming a polycrystalline semiconductor layer on the surface of said buffer layer;

~~a nanocrystallization step of~~ nanocrystallizing at least a portion of said polycrystalline semiconductor layer through an anodizing process to form the semiconductor nanocrystals; and

~~an insulating film forming step of~~ forming the insulating film on the surface of each of said semiconductor nanocrystals.

9. (Currently Amended) The method according to claim 8, wherein ~~said second film-forming step~~ the forming of the polycrystalline semiconductor layer is performed after ~~said first film-forming step~~ the forming of the buffer layer without exposing the surface of said buffer layer to the atmosphere.

10. (Currently Amended) The method according to claim 9, in which a plasma CVD process is used as a film-forming process in forming the buffer layer and polycrystalline semiconductor layer ~~each of said first and second film-forming steps~~, wherein when the forming of the buffer layer ~~said first film-forming step~~ is shifted to the forming the polycrystalline semiconductor layer ~~said second film-forming step~~, a discharge power for said plasma CVD process is changed from a first condition for forming the buffer layer to a second condition for forming the polycrystalline semiconductor layer.

11. (Currently Amended) The method according to claim 9, in which a plasma CVD process is used as a film-forming process in forming the buffer layer and polycrystalline semiconductor layer ~~each of said first and second film-forming steps~~, wherein when the forming of the buffer layer ~~said first film-forming step~~ is shifted to the forming the polycrystalline semiconductor layer ~~said second film-forming step~~, a discharge pressure for said plasma CVD process is changed from a first condition for forming the buffer layer to a second condition for forming the polycrystalline semiconductor layer.

12. (Currently Amended) The method according to claim 9, in which a plasma CVD process or catalytic CVD process is used as a film-forming process in forming the buffer layer and polycrystalline semiconductor layer ~~each of said first and second film-forming steps~~, wherein when the forming of the buffer layer ~~said first film-forming step~~ is shifted to the forming the polycrystalline semiconductor layer ~~said second film-forming step~~, the partial pressure ratio of source gases for said plasma CVD process or catalytic CVD process is changed from a first condition for forming the buffer layer to a second condition for forming the polycrystalline semiconductor layer.

13. (Currently Amended) The method according to claim 9, in which a plasma CVD process or catalytic CVD process is used as a film-forming process in forming the buffer layer and polycrystalline semiconductor layer ~~each of said first and second film-forming steps~~, wherein when the forming of the buffer layer ~~said first film-forming step~~

is shifted to the forming the polycrystalline semiconductor layer ~~said second film-forming step~~, the kind of source gases for said plasma CVD process or catalytic CVD process is changed from a first condition for forming the buffer layer to a second condition for forming the polycrystalline semiconductor layer.

14. (Currently Amended) The method according to claim 8, which includes between forming the buffer layer and polycrystalline semiconductor layer, ~~said first and second film-forming steps~~ a pre-growth treatment [[step]] of subjecting the surface of the buffer layer to a treatment for facilitating the creation of a crystal nucleus in the initial stage of forming the polycrystalline semiconductor layer ~~said second film-forming step~~.

15. (Currently Amended) The method according to claim 14, wherein said pre-growth treatment ~~step is a step of~~ comprises subjecting the surface of said buffer layer to a plasma treatment.

16. (Currently Amended) The method according to claim 14, in which said pre-growth treatment ~~step is a step of~~ comprises subjecting the surface of said buffer layer to a hydrogen plasma treatment, wherein forming the polycrystalline semiconductor layer ~~said second film-forming step~~ includes forming a polycrystalline silicon layer serving as the polycrystalline semiconductor layer through a plasma CVD process using a source gas including at least a silane-based gas.

17. (Currently Amended) The method according to claim 14, wherein said pre-growth treatment ~~step is a step of~~ comprises subjecting the surface of said buffer layer to an argon plasma treatment.

18. (Currently Amended) The method according to claim 14, wherein said pre-growth treatment ~~step is a step of~~ comprises forming a layer including a number of silicon nanocrystals, on the surface of said buffer layer.